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ATTORNEY DOCKET NO. 10003869-01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Douglas J Dellinger, et al.,

Serial No.: 09/916369

Examiner:

Filing Date: Jul 27, 2001

Group Art Unit:

Title: Synthesis Of A Polynucleotides Using Combined Oxidation/Deprotection Chemistry

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

This Information Disclosure Statement is submitted:

- (a) ☒ Under 37 CFR 1.97(b).
(Within three months of filing national application; or date of entry of national application; or before mailing date of first Office action on the merits; whichever occurs last).
- (b) ☐ Under 37 CFR 1.97(c) together with **either** a:
☐ Statement under CFR 1.97(e), or
☐ \$180.00 fee under 37 CFR 1.17(p).
(After the CFR 1.97(b) time period, but before a final action or notice of allowance, whichever occurs first).
- (c) ☐ Under 37 CFR 1.97(d) together with: a
Statement under 37 CFR 1.97(e), **and**
\$180.00 fee as set forth in 37 CFR 1.17(p).
(After a final action or notice of allowance, whichever occurs first, but before payment of the issue fee).

☐ STATEMENT UNDER 37 CFR 1.97(e)

The undersigned certifies that:

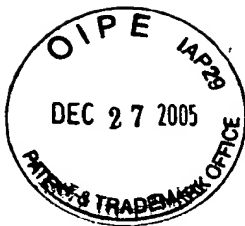
- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement, or
- ☐ No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of the Information Disclosure Statement.

☐ PRIOR APPLICATIONS

References identified with an asterisk (*) in the enclosed PTO Form 1449, were disclosed in prior Patent Application No. _____, filed _____, now U.S. Patent No. _____, and, as such, copies thereof are not included pursuant to the provisions of 37 CFR 1.98(d).

☐ FOREIGN LANGUAGE DOCUMENTS

A concise explanation of the relevance of foreign language patents, foreign language publications and other foreign language information listed on PTO form 1449, as presently understood by the individual(s) designated in 37 CFR 1.56(c) most knowledgeable about the content is given on the attached sheet, or where a foreign language patent is cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action which indicates the degree of relevance found by the foreign office is listed on form PTO 1449 and is enclosed herewith.



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Please charge to Deposit Account **50-1078** the sum of \$0.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

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Respectfully submitted,

Douglas J Dellinger, et al.,

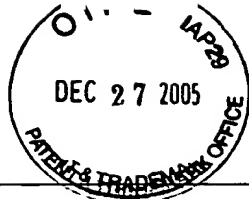
By Michael J. Beck

Michael J. Beck
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Reg. No. 40,907

Date: December 23, 2005

Telephone No. 650 485 3864



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(Use several sheets if necessary)

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REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	*	DOCUMENT NUMBER	DATE	NAME
		US2003/129589	07/10/2003	Koster, et al.,
		US2002/0055880	05/09/2002	Unold, et al.,
		US2002/0045221	04/18/2002	Dellinger, et al.,
		6,008,400	12/28/1999	Scaringe, et al.,
		4,808,708	02/28/1989	Yoshida, et al.,
		5,908,926	07/01/1999	Pirrung, et al.,
		5,763,599	06/09/1998	Pffeiderer, et al.,
		6,147,205	11/4/2000	McGall, et al.,
		5,861,242	01/19/1999	chee, et al.,

FOREIGN PATENT DOCUMENT

	DOCUMENT NUMBER	DATE	NAME	TRANSLATION YES	NO
	EP 0 984 021 A2	03.08.1999	Dellinger, et al.,		
	EP 0 742 287 A2	09.05.1996	McGall, et al.,		
	EP 0 428 810 A2	17.05.1999	Shchepinov, et al.,		
	EP 0 984 021 A3	03.08.1999	Dellinger, et al.,		
	EP 1 428 810 A2	17.05.1999	Shchepinov, et al.,		

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

	Y. Hayakawa, M. Uchiyama and R. Nyori, "Nonaqueous Oxidation of Nucleoside Phosphites to the Phosphates", Chemical Center and Department of Chemistry, Nagoya University, Tetrahedron Letters, Vol. 27, No. 35, pp 4191-4194, 1986
	Serge L. Beaucage and Redhakrishnam P. Iyer, "Advances in the Synthesis of Oligonucleotides by the Phosphoramidite Approach", Tetrahedron Report Number 9, Vol. 48, No. 12, pp. 2223-2311, 1992; Division of Biochemistry and Biophysics, Center for Biologics Evaluation and Research Food and Drug Administration, Bethesda, Maryland 20892
	Jean-Louis Fourrey and Jeannette Varenne, "Introduction of a Nonaqueous Oxidation Procedure in the Phosphite Trieseter Route for Oligonucleotide Synthesis", Tetrahedron Letters, Vol. 6, No. 9, pp. 1217-1220, 1985.

EXAMINER

DATE CONSIDERED

* Copies of these references are not enclosed Pursuant to 37 CFR 1.98(d). (See accompanying IDS)

Page 1 of 7



Form PTO-1449

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EXAMINER INITIAL	*	DOCUMENT NUMBER	DATE	NAME
		6,222,030	04/24/2001	Dellinger, et al.,
		6,069,243	05/30/2000	Anthony Scozzari
		5,210,264	05/11/1993	Eric K. Yau
		34,069	09/15/1992	Koster, et al.,
		5,132,418	07/21/1992	Caruthers, et al.,
		4,973,679	11/27/1990	Caruthers, et al.,
		4,725,677	02/16/1988	Koster, et al.,
		4,668,777	05/26/1987	Caruthers, et al.,
		4,500,707	02/19/1985	Caruthers, et al.,

FOREIGN PATENT DOCUMENT

	DOCUMENT NUMBER	DATE	NAME	TRANSLATION YES NO	
	EP 0 241 363 A1	03.04.87	Molko, et al.,		
	WO 98/41531	20.03.98	Blanchard, Alan		
	WO 92/10092	20.11.91	Fodor, et al.,		
	WO 96/28457	15.03.96	Pirrung, et al.,		
	WO 00/18778	28.09.99	Lohse, et al.,		

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

	Michael C. Pirrung and Jean-Claude Bradley, "Comparison Methods for Photochemical Phosphoramidite-Based DNA Synthesis", J. Org. Chem. 1995, 60, pp. 6270-6276. Department of Chemistry, P. M. Gross Chemical Laboratory, Duke University, Durham, North Carolina 27708-0346.
	Hayes Dougan, John B. Hobbs, Jeffrey I. Weitz and Donald M. Lyster, "Synthesis and Radioiodination of a Stannyl Oligodeoxyribonucleotide", Nucleic Acids Research, 1997, Vol. 25, No. 14, pp. 2897-2901.
	Shigenori Iwai and Eiko Ohtsuka, "5'-Levulinyl and 2'-tetrahydrofuranyl protection for the synthesis of Oligoribonucleotides by the phosphoramidite approach", Nucleic Acids Research, Volume 6, Number 20, 1988, pp. 9443-9456.

EXAMINER

DATE CONSIDERED

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Page 2 of 7



Form PTO-1449

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		4,458,066	07/03/1984	Caruthers, et al.,
		4,415,732	11/15/1983	Caruthers, et al.,
		5,705,621	01/06/1998	Ravikumar, Vasulinga
		6,166,198	12/26/2000	Livingston, Doug
		5,874,554	02/23/1999	Gamble, et al.,

FOREIGN PATENT DOCUMENT

	DOCUMENT NUMBER	DATE	NAME	TRANSLATION YES	NO
	WO 98/393348	05.03.1998	McGall, et al.,		
	WO 00/27859	06.11.1998	Monoharan, Muthiah		
	WO 99/54509	20.04.1998	McGall, et al.,		
	WO 00/61594	07.04.2000	Beier, et al.,		
	European Search	Report	21 December 2002 pp 26-27		

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

	Herald Sigmund, Thomas Maier and Wolfgang Pfeiderer, "A New Type of Fluorescence Labeling of Nucleosides, Nucleotides and Oligonucleotides", Nucleosides & Nucleotides, 16(5&6) pp. 685-696 (1997).
	Ahmad Hasan, Hong Li, Jeno Tomasz and Barbara Ramsay Shaw, "Base-boronated dinucleotides: synthesis and effect of N7-cyanoborane substitution on the base protons", Nucleic Acids Research, 1996, Vol. 24, No. 11, pp. 2150-2157.
	Frank Bergman, and Wolfgang Pfeiderer, "The 2-Dansylethoxycarbonyl (=2-[[5-(Dimethylamino) naphthalen-1-yl]sulfonyl]ethoxycarbonyl;Dnseoc)Group for Protection of the 5'-Hydroxy Function in Oligodeoxyribonucleotide Synthesis", Helvetica Chimica Acta - Vol. 77 (1994), pp.203-214.

EXAMINER

DATE CONSIDERED

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Page 3 of 7



Form PTO-1449

LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S INFORMATION DISCLOSURE
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(Use several sheets if necessary)

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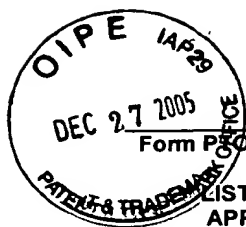
	Michael C. Pirrung and Lora Fallon, "Proofing of Photolithographic DNA Synthesis with 3', 5' Dimethoxybenzoinyloxycarbonyl-Protected Deoxynucleoside Phosphoramidites", American Chemical Society, 1998, pp. 241-246.
	Frank Bergman, Erich Kueng, Patric laiza, and Willi Bannwarth, "Allyl as Internucleotide Protecting Group in DNA Synthesis to be Cleaved Off by Ammonia", Tetrahedron, Vol. 51, No. 25, pp. 6974-6976.
	Mitsuo Sekine, Narihiro Masuda and Tsujiaki Hata, "Synthesis of Oligodeoxyribonucleotides Involving a Rapid Procedure for Removal of Base-Protecting Groups by Use of the 4,4'-Tris(benzoyloxy)trityl (TBTr) Group", The Chemical Society of Japan, 59, pp. 1781-1789, June, 1986.

EXAMINER

DATE CONSIDERED

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Page 4 of 7



Form PTO-1449

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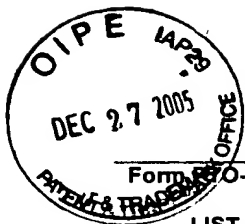
	Reiko Iwase, Mitsuo Sekine, Tsujiaki Hata and Kin-ichiro Miura, "A New Method for the Synthesis of Capped Oligoribonucleotides by Use of an Appropriately Protected 7-Methylguanosine Diphosphate Derivative as a Donor for the Triphosphate Bond Formation", Tetrahedron Letters, Vol. 29, No. 24, pp. 2969-2972, 1988.
	J. Katzhendler, S. Cohen, E. Rahamin, M. Weisz, I. Ringel and J. Deutsch, "The Effect of Spacer, Linkage and Solid Support on the Synthesis of Oligonucleotides", Tetrahedron, Vol. 45, No. 9, pp. 2777-2792, 1989.
	David W. Will, Gerhard Breiphof, Dietrich Langner, Jochen Knolle and Eugene Uhlmann, "The Synthesis of Polyamide Nucleic Acids Using a Novel Monomethoxyribo Protecting-Group Society", Tetrahedron, Vol. 51, No. 44, pp. 12069-12082, 1995

EXAMINER

DATE CONSIDERED

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Page 5 of 7



Form PTO-1449

LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S INFORMATION DISCLOSURE
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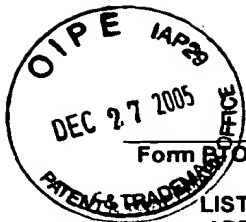
	Takashi Kamimura, Masahiko Tsuchiya, Ken-ichi Urakami, Koji Koura, Mitsuo Sekine, Kazuko Shinozaki, Kin-ichiro Miura, and Tsujiaki Hata, "Synthesis of a Dodecaribonucleotide, GUAUCAUAUAUG By Use of "Fully" Protected Rinonucleotide Building Blocks", American Chemical Society, 1984, pp. 4552-4557.
	Mitsuo Sekine and Tsujiaki Hata, "Synthesis of Short Oligoribonucleotides Bearing a 3'- or 5'-Terminal Phosphate by Use of 4,4', 4"-Tris(4,5-dichlorophthalimido)trityl as a New 5'-Hydroxyl Protecting Group", American Chemical Society, 1986, pp. 4581-4586.
	Mitsuo Sekine, Narihiro Masuda and Tsujiaki Hata, "Introduction of the 4, 4' 4"-Tris(Benzoyloxy)Trityl Group into the Exo Amino Groups of Deoxyribonucleotides and its Properties", Tetrahedron, Vol. 41, No. 23 pp. 5445-5453.

EXAMINER

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Page 6 of 7



Form PTO-1449

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	A. Nyilas, C. Glemarec & J. Chattopadhyaya, "Synthesis of [3'(O)>5'(C)]-Oxyacetamido Linked Nucleotides", Tetrahedron, Vol. 46, No. 6, pp. 2149-2164, 1990.
	Yoshihiro Hayakawa, "Regiodefined Synthesis and Conformational Properties of Adenyldiyl Trimers with Unsymmetrical 2'-5' and 3'-5' Internucleotide Linkages", Tetrahedron, Vol. 51, No. 36, pp. 9899-9916, 1995.
	H. Koster, "Polymer Support Oligonucleotide Synthesis VI 1-5 Use of Inorganic Carriers", Tetrahedron Letters, No. 16, pp. 1527-1530, 1972.

EXAMINER

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Page 7 of 7